Sanjay Dinesh

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Education

Vellore Institute of Technology, Chennai, B.Tech in Computer Science Engineering with Specialization in Artificial Intelligence and Robotics — Aug 2023 - Present

- **CGPA:** 9.69/10.0
- **Awards:** Department **Rank 3**

Experience

Dreadnought Robotics, Programming Team Member, VIT Chennai — April 2024 – Present

- Contributed to the development of **Project MIRA** for SAUVC (Singapore AUV Challenge) 2025, focusing on perception and deep learning-based keypoint detection using **MobileNetV2SSD**.
- Built object detection and navigation systems for an **obstacle avoidance robot** using YOLOv5 and sensor fusion.
- Implemented control and path planning algorithms (**PD**, **Bang-Bang**, **A***, **LSRB**) for a **maze-solving robot**.

Microsoft Innovations Club, AIML Lead, VIT Chennai — April 2025 - Present

- Leading a team of students to build an **AI-powered Resume Builder** that utilizes NLP techniques for content enhancement, skill extraction, and formatting optimization.
- Spearheading the development of an **AI Academic Assistant** aimed at automating question generation, summarization, and personalized academic support using LLMs and transformer-based models.

Autonomous Underwater Vehicles Club, President, VIT Chennai — July 2025 - Present

- Overseeing all strategic and operational decisions as President of the club, leading planning and coordination efforts for technical and outreach events conducted during the academic year.

Projects

MIRA – Autonomous Underwater Vehicle (AUV) — SAUVC 2025

- Leading development of the **perception system** for underwater navigation, including real-time object detection, keypoint localization, and image enhancement using OpenCV.
- Built and trained a deep learning pipeline combining **MobileNetV2SSD** and bounding box prediction for robust underwater gate detection in murky visual conditions.

AI Teaching Assistant for Rural Classrooms — Ongoing Project

- Currently developing an AI-powered teaching assistant, aimed at supporting teachers in multi-grade rural classrooms using multimodal reasoning and agent-based workflows.
- Integrating **Vertex AI Gemini**, **Firebase**, and **n8n pipelines** to enable features such as syllabus-to-study plan automation, image-based worksheet generation, and voice Q&A in local languages, with a focus on low-resource infrastructure.

Autonomous Maze Solver Robot — Techfest, IIT Bombay Zonals

- Designed and tested multiple path-planning algorithms including **Left-Hand Shortest Route Back (LSRB)**, **A***, and **Bang-Bang Control** for adaptive navigation in mazes.
- Developed a high-speed **Proportional-Derivative (PD)** line-following controller for accurate path tracking under varying curvature and speeds.

Skills and Frameworks

Languages: Python, C, C++, Java, JavaScript, HTML, CSS
Frameworks & Libraries: ReactJS, ROS, OpenCV, PyTorch, TensorFlow
Tools & Platforms: Linux, Git